Kelly, Shaheerah

From: Kelly, Shaheerah
Sent: Wednesday, August 07, 2013 6:51 PM
To: 'Dave Brown'
Cc: Rios, Gerardo; Christenson, Kara
Subject: SPI Anderson GHG BACT Analysis
Attachments: Draft SPI GHG BACT Additional Info Needed - EPA notes 08072013.docx; EPA-SPI Meeting Participants 06AUG2013.pdf

Hi Dave,

It was a pleasure meeting you and the other SPI representatives. Per our discussion at the meeting, the attached document contains our responses regarding the revised GHG BACT analysis. Also attached is the list of meeting participants.

In addition, I understand that you will be providing us with a summary of the power contract agreement, share deadlines and operational requirement timelines, and include how the agreement requires the SPI Anderson facility to have the operational flexibility it needs.

I will be away from the office until Tuesday, August 20.

Thanks.

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Additional Information EPA Will Need from Sierra Pacific Industries-Anderson Division to Proceed with a voluntary GHG PSD Permit

(Note: SPI's responses as in red; EPA's follow-up responses are in yellow highlight)

EMISSION ESTIMATES

1. In addition to the information provided in Table 2-1 in the Sierra Pacific Industries's (SPI) June 2011 Best Available Control Technology (BACT) analysis for greenhouse gas (GHG) emissions:

    a. GHG emission estimates and calculations (and assumptions used in these calculations) for each of the new and modified emission units (e.g., biomass boiler, emergency engine, circuit breakers,etc) for (1) maximum worst case annual emission estimates of GHG pollutants (i.e., CO_2e, CO_2, N_2O, CH_4, SF_6,etc) expected from the emission units in tons per year (tpy); Revised and expanded Table 2-1

    b. Emission estimates of GHG pollutants expected during startup periods, shutdown periods, and normal operation expected from the emission units in tpy; and Added explanatory text (Please provide actual quantified estimates of GHG emissions during startup and shutdown periods.)

    c. Emission estimates of GHG pollutants for existing equipment at the facility in tpy. Added Table 2-2

GHG BACT ANALYSIS

1. An assessment of the use of stoker and fluidized bed boiler in the design of the cogeneration unit for minimizing GHG emissions. For your information, EPA's combined heat and power (CHP) website has information on biomass conversion technologies, and includes information on stoker and fluidized bed boilers that may be useful.[1] Added explanatory text (Please provide a technical assessment of use of a stoker and fluidized bed boiler in Step 1, and throughout the BACT analysis if applicable, which includes a comparison of efficiencies. In addition, please consider adding a cost effectiveness analysis for stoker vs fluidized in Step 3 as another argument to their redesigning source argument.)

2. A GHG assessment of any new circuit breakers that potentially emit SF_6 in the GHG BACT analysis. Added explanatory text; existing circuit breakers will remain and be used by proposed cogeneration unit, therefore, no evaluation is needed

3. A GHG assessment of the proposed natural gas-fired 256 horsepower emergency engine. Added section 8

[1] See the section titled "Biomass CHP Catalog of Technologies" at http://www.epa.gov/chp/technologies.html.

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4. An assessment that considers GHG BACT determinations made for other biomass boiler units. We are aware of the following projects in Table 1 that have been evaluated and issued final permits with GHG emission and operational limits. Obtained and reviewed permit materials for all facilities in table below, added text briefly summarizing findings (Compare the BACT limits and requirements for these facilities with those proposed for the SPI biomass boiler. If there are any determinations for these facilities that are not accepted by SPI, please explain why the control option or limit is not feasible for the SPI cogeneration unit.)

Table 1: Recent Permit Decisions containing GHG Determinations

Facility	State	Permit Issuance Date
Montville Power LLC	CT	4/6/2010
Beaver Wood Energy Fair Haven LLC	VT	2/10/2012
North Springfield Sustainable Energy Project	VT	4/19/2013
WE Energies (Rothschild facility)	WI	3/28/2011
Abengoa Bioenergy Biomass of Kansas LLC	KS	9/16/2011 (Effective date)

5. An evaluation of the technical feasibility of using carbon adsorption in Section 4. Section 3.2 identifies carbon adsorption as a potential control technology for minimizing methane emissions. Added clarifying text (Explain why this technology is not technically feasible for the SPI biomass boiler (e.g., concentration of methane is expected to be low in the exhaust stream). Please provide specific information about the operation or emissions from the biomass boiler and the optimum or expected conditions for a carbon adsorption unit to work properly.)

6. An evaluation of the technical basis that explains why thermal oxidation is not technical feasible for the boiler. Section 4.2, under Thermal Destruction, eliminates thermal oxidation as technically infeasible for control of methane from the boiler because "it is not clear that use of such system would result in a net reduction in methane." Added clarifying text (Explain why this technology is not technically feasible for the SPI biomass boiler (e.g., concentration of methane is expected to be low in the exhaust stream). Please provide specific information about the operation or emissions from the biomass boiler and the optimum or expected conditions for a thermal oxidizer to work properly.)

7. An evaluation of the technical basis that explains why non-selective catalytic reduction (NSCR) is not feasible for the boiler. Section 4.3, under Non-Selective Catalytic Reduction Systems, eliminates NSCR as technically infeasible for control of nitrous oxide from the boiler because "significant differences exist between the exhaust from adipic and nitric acid operations and that of a biomass-fired boiler, it is not clear that the technology could be transferred effectively." It would be helpful if SPI would explain these differences. Removed text to jibe with determination that NSCR was not technically feasible, also added clarifying text (Explain why this technology is not technically feasible for the SPI biomass boiler (e.g., concentration of methane is expected to be low in the exhaust stream). Explain the "significant differences" between the SPI's cogeneration unit and the adipic/nitric acid operations. For example, SPI can compare the differences in concentrations in the exhaust streams. Also, please provide specific information about the operation or emissions from the biomass boiler and the optimum or expected conditions for a NSCR unit oxidizer to work properly.

8. Emission calculations (and assumptions used) for the estimates of "percent reduction in emitted GHGs on a CO_2e basis" in section 5 of the analysis. This is currently not provided in the analysis. Added references and reduction calculations

9. Cost calculations (and assumptions used) for the estimates of "percent reduction in emitted GHGs on a CO_2e basis" in section 6 of the analysis. This is currently not provided in the analysis. Biomass Fuel Use – no cost calculation needed; CCS – referenced cost calculation from NETL document; Catalytic Destruction – calculated cost threshold from calculated potential reduction and value of CO_2e reduction; Removal of SNCR System – unacceptable from environmental standpoint, so no cost calculation needed; Proper Combustion/Energy Efficiency – no cost calculation needed (Provide specific cost calculations, including capital and annualized costs, for CCS in Step 4. Also provide specific environmental impacts and quantity of energy impacts to the extent that it can be quantified.)

10. A proposed annual CO_2e emission limit in tpy for the proposed project. Proposed GHG BACT limit (annual tpy) provided (See comment #4 above.)

8/6/2013

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